Acton Water District

SUMMER 2007

Water Words Notice

DEAR CUSTOMER:

The Acton Water District is fortunate to have a group of dedicated, experienced and talented employees who strive every day to ensure that our users are provided with clean, potable water every time they open the faucet.

One of the unique things about underground infrastructure—water and sewer in particular—is that almost everything that goes into making sure that it works, does so largely unseen to most of us. It's only when it doesn't work, when the water is dirty or when the pressure is low, that we are noticed. There is an expectation, and rightfully so, that the public water supplier will do whatever is needed to meet these obligations.

No one is more disappointed when the system breaks down than are the people who are responsible for making it work. While there is unquestionably an inconvenience to the public, it is the employees who must make the greatest sacrifices to see to it that the broken water main is repaired, that the cause of the dirty water is found and cured, and that the continued supply of clean and safe potable water goes on uninterrupted to our users.

It has been my honor and privilege over the past eleven years to have served you, and to have directed this particular group of employees. I can assure you that we have always given our best effort to meet your expectations. Having managed four other public water supply systems in Massachusetts, I can assure you that the people here are amongst the very best in their field. As I end my 30-plus year career in the public water supply field, I do so with the knowledge that I am leaving behind an organization that will continue this same effort. Whoever is selected to fill the Manager's position will be inheriting a staff that is second to none.

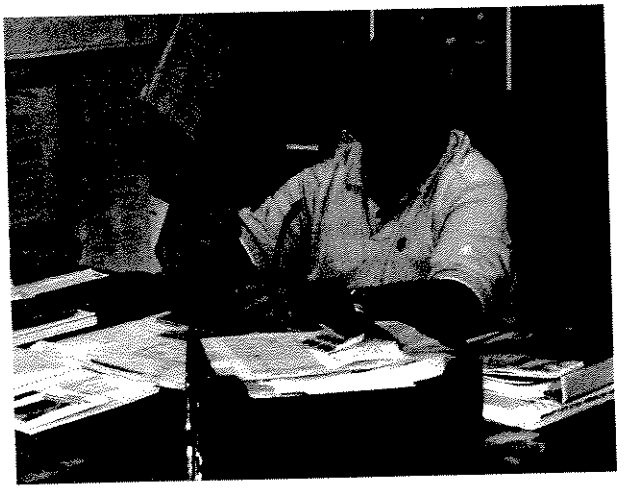
I would also be remiss if I didn't acknowledge the contributions of your elected and appointed officials. Your elected Commissioners, Mr. Stuntz, Mr. Parenti, and Mr. Phillips have all served for more years than I, and they have done so largely as volunteers. The stipend that they receive does not begin to compensate them for their time and their commitment. I have also been blessed with guidance and support throughout all of these past 11 years from Mary Bassett, our legal counsel, Dick O'Brien, our moderator, Chip Orcutt, our clerk and our Finance Committee, Mr. Kingman, Mr. Jarvis and Mr. Bradley.

The Town of Acton is a wonderful community and while the Water District is a separate entity, we both serve the same people. I would like to thank all the town departments, the Highway Department, and Mr. Dave Brown in particular, for all the help and support that has been given to me over these past 11 years.

Finally—to you—the people of Acton, whom it has been my pleasure to have served, thank you for your cooperation and understanding.

Regards,

James L. Deming
Manager, Acton Water District



Jim Deming will be retiring from the Acton Water District this summer.

How Hard is Acton's Water?

A water's "hardness" is derived largely from contact with soil and rock formations. Hardness is a measure of the levels of metal ions, mainly calcium and magnesium in the form of carbonates, in water. While it is not generally dangerous to safety or health, water with excessive hardness can cause problems with scale formation on fixtures that it comes in contact with. Conversely, "soft" water can be corrosive, eroding pipe or other materials in which it comes in contact. Some utilities adjust the hardness of water to achieve a level that will neither deposit scale, nor be too corrosive.

The Acton Water District is fortunate in that most of our wells have a moderate amount of hardness. We often receive questions about how many "grains" of hardness we have in our water. Homeowners encounter this unit of measurement in manuals for dishwashers, fish tank filtering systems, etc. It is a measurement not commonly used in the U.S, but can be easily calculated from mg/L, the unit commonly used to measure hardness. Approximately 17 mg/L of hardness equals one grain per gallon. Raw water hardness from our wells varies, but an average around 50 mg/L could be used as a "ballpark."

Example: *50 mg/L in our water*
17 grains/gallon = 2.95 grains/gallon

Water from our wells falls into the "slightly hard" to "moderately hard" category. Customers should be reassured that they will not experience the common problems attributed to very "hard" or very "soft" water.

Assabet 3 Wellfield

The Acton Water District has been working towards the redevelopment of the Assabet 3 well in South Acton in order to ensure that we can continue to meet the potable water supply and fire protection needs of the community, as well as to be in a position to meet whatever needs the people of the town of Acton deem appropriate in the future. Assabet 3, when combined with the currently permitted withdrawals from Assabet 1A and Assabet 2A, would provide sufficient water to meet more than 75% of the current demand throughout the entire system, and there would still be a surplus of water available in the aquifer to sustain the surrounding ecosystems.

Although the Assabet 3 well is located near a contaminated plume emanating from the WR Grace site, a groundwater transport model has shown that an additional 350 gallons per minute could be withdrawn from Assabet 3 without drawing any of the remaining contaminants into the well. Further monitoring and testing several observation wells in the area will be conducted to confirm the groundwater transport model.

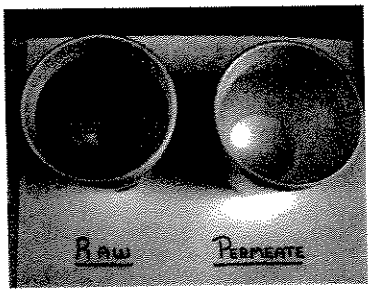
In January of 2007, the Massachusetts Department of Environmental Protection (DEP) conducted a site visit to the existing Assabet 3 location for the purposes of discussing redevelopment of this well and a pump test. In April 2007 the DEP gave the Acton Water District approval for the Assabet 3 pump test. Recently, the observation wells selected to be used were cleaned in preparation for the proposed pumping test. Updates on Assabet 3 redevelopment will be provided on our website *www.actonh2o.com*, as well as in upcoming newsletters.

Land and Water Management Advisory Committee Report Available

After more than a year of hard work and many, many long meetings, the Land and Water Management Advisory Committee has completed its mission to address the issues surrounding future expansion of the Acton Water District's service area. The Committee discussed and evaluated the merits and downsides of many possible expansion scenarios in light of the effect of each on the environment, water, cost, water quality, and water availability. The Committee examined the broad topic of expansion by breaking it into three categories: expansion within District, expansion outside of the current District, and regionalization. A copy of the report is available at the Acton Public Library, or via the publications link on our website: *www.actonh2o.com.*

Kennedy/Marshall Treatment Plant

The Kennedy and Marshall Wellfields, the main sources of public water supply in North Acton, have historically had undesirable and intermittent occurrences of aesthetic water quality problems—primarily organic color, manganese, and iron. Five separate treatment technologies were tested on the water of the Kennedy and Marshall Wellfields to determine the best treatment technology. These technologies included several natural and a few "engineered" filtration media, ozonation, and membrane ultrafiltration. The treatment technology that was most able to consistently remove the high levels of raw water manganese and color was the Zenon ultrafiltration membrane system. District members voted at the Water District Annual Meeting this past March to appropriate 4.4 million dollars for the construction of a full-scale membrane treatment plant at the Kennedy and Marshall Wellfields. We anticipate that design, permitting, and regulatory review and approval will be completed by the end of 2007, and construction of the full-scale treatment facility is expected to be completed by early 2009.



In pilot tests, an ultrafiltration system proved the best technology to remove color and natural organic material from the Kennedy and Marshall wells.

Report on Water Quality

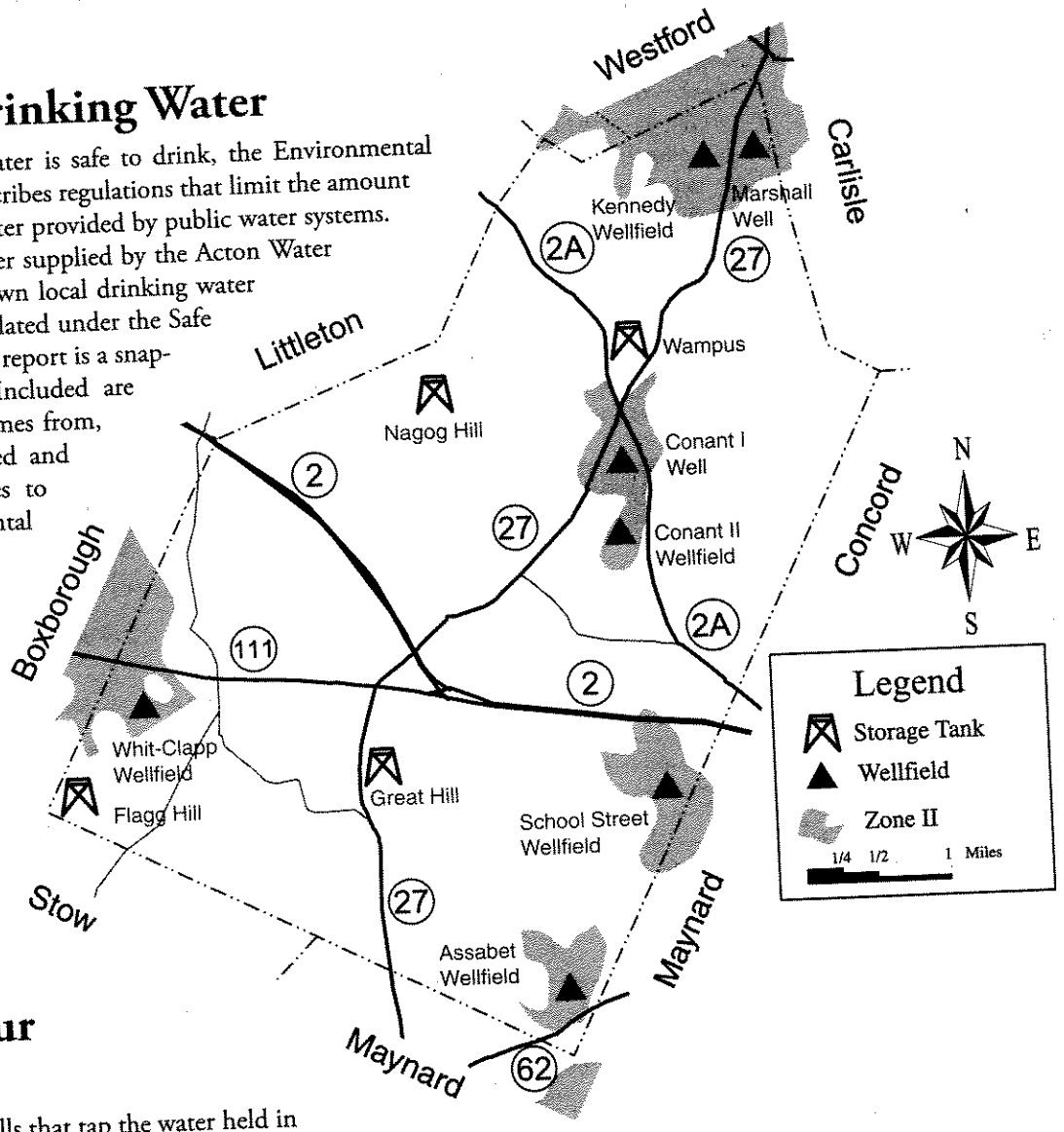
SUMMER 2007 — PWS 2002000

Acton Water District

Testing for Your Drinking Water

In order to ensure that tap water is safe to drink, the Environmental Protection Agency (EPA) prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. In 2006, as in years past, water supplied by the Acton Water District met EPA, state, and our own local drinking water health standards for chemicals regulated under the Safe Drinking Water Act (SDWA). This report is a snapshot of water quality in 2006. Included are details about where your water comes from, what it contains, how it is treated and distributed, and how it compares to standards set by the Environmental Protection Agency.

The Acton Water District vigilantly safeguards your water supplies by employing multiple barriers for protection, including source water protection, distribution system protection, ongoing monitoring, and treatment. Last year, we collected more than 600 samples and tested them for over 100 different potential drinking water contaminants.



The Source of Your Drinking Water

Your water comes from wells that tap the water held in the ground beneath the town of Acton. The District has twenty-one different wells that withdraw water from seven wellfields located in various parts of town. Water from each well is pumped to treatment facilities located in each of the various wellfields, and then into the distribution system (a network of 120 miles of water mains) where it blends together and is delivered to homes, businesses, schools, and other public users. The map on this page shows the various wellfields and the critical, protective radius (called Zone II) around each wellfield.

Protection for Your Drinking Water

The Acton Water District employs three important "barriers" to maintain the highest possible quality of drinking water:

- A protective area called Zone II surrounds each of Acton's wells. Land use activities that could adversely affect water quality are restricted within the Zone II area.
- Each of Acton's wells is treated in order to remove impurities and improve the taste of the water. Water treatment specifics are listed below.
- The system of pipes that delivers water to your home is protected by a program that works to minimize "cross connections" between potable (intended for human consumption) and non-potable water. An example of a cross connection is a point where a drinking water pipe might connect to a sprinkler system or to an outside irrigation system.

Why are Impurities in Your Drinking Water?

As water travels through the ground it dissolves naturally occurring minerals. It can also pick up substances resulting from animal or human activity. Contaminants that may be present in source water include:

- **Microbiological** contaminants (such as viruses and bacteria) that may come from septic systems, agriculture, and wildlife.
- **Inorganic** contaminants (such as salts and metals) may be naturally occurring or result from storm runoff, wastewater discharge, mining and farming.
- **Pesticides and herbicides** may come from a variety of sources such as agriculture, storm water runoff, and residential uses.
- **Organic chemical** contaminants are byproducts of industrial processes, and can also come from gas stations, urban storm water runoff, and septic systems.
- **Radioactive** contaminants can be naturally occurring or be the result of oil and gas production and mining activities.

All drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some impurities. The presence of an impurity does not necessarily indicate that the water poses a health risk. The Acton Water District has compiled information on drinking water and health in our drinking water resource center. Please feel free to visit or call us for information, or call the Environmental Protection Agency's Safe Drinking Water Hotline at 1-800-426-4791.

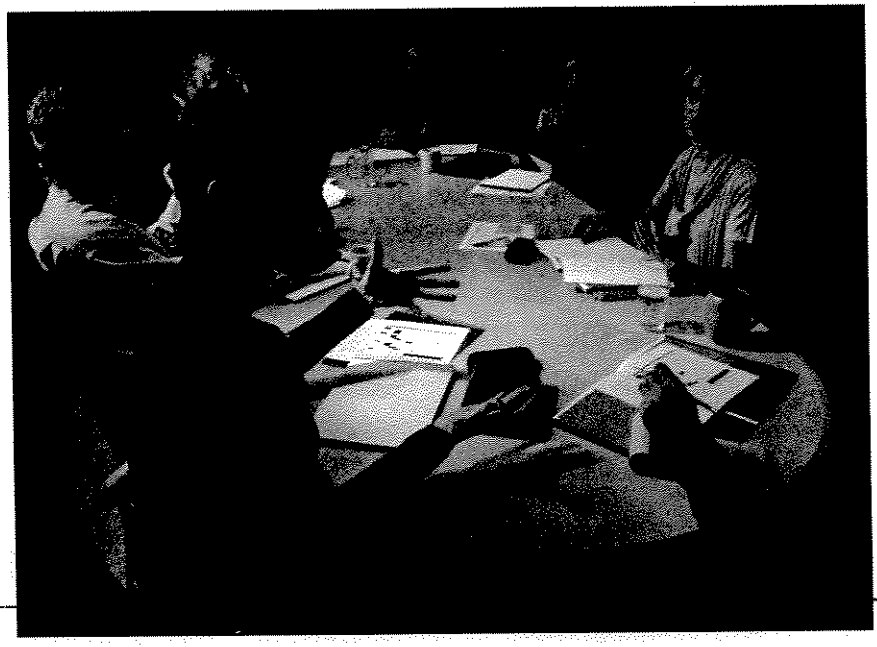
Treatment for Your Water

To meet local, state, and federal requirements, and to improve taste and appearance, the Acton Water District treats all of its water before it is supplied to our customers. The table below shows the treatment provided at each wellfield.

Treatment	Conant Well	Conant II Wellfield	Marshall Well	School Street Wellfield	Assabet Wellfield	Kennedy Wellfield	Clapp/Whitcomb Wellfield
Aeration *VOC removal*		♦		♦	♦	♦	♦
Chlorination *disinfection*	♦	♦		♦	♦	♦	♦
Fluoridation *tooth decay protection*	♦	♦	♦	♦	♦	♦	♦
pH Adjustment *corrosion control*	♦						
Carbon Filtration *taste/color control*							♦

Do You Want to Become More Involved?

The Board of Water Commissioners meetings are scheduled on the second and fourth Monday of each month at 7:30 PM, and all citizens of Acton are welcome to attend. If you wish to attend, please call us to confirm the next meeting date. Our Annual Meeting is held on the third Wednesday of March every year. All interested persons are welcome to attend.



Water Quality Data Table

The data presented in the table below are from calendar year 2006. Only compounds that were detected are reported in this table. Because water from all wellfields is blended within the distribution system, these data represent the range of water quality in all wellfields.

Substance (units)	Range of Detects	Level Allowed (MCL)	Goal (MCLG)	Typical Source	Exceeds MCL?
Regulated Substances (MCL has been established)					
Total Coliform	0 -1 positive samples	< 2 samples positive/month	0	Naturally present in the environment	No Monthly MCL Violations
Trihalomethanes (ppb)	0.0 - 33 average: 20	100	No MCLG	Formed when natural organic material present in the water reacts with chlorine added as a disinfectant	No
Nitrate (ppm)	0.23 - 2.9	10	10	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits	No
Fluoride (ppm)	0.84 - 5.3	4	4	Erosion of natural deposits, water treatment additive for dental health	Yes
Haloacetic Acids (ppb)	0.0 - 4.6	60	0	Formed when natural organic material present in the water reacts with chlorine added as a disinfectant	No
1,1 Dichloroethylene (ppb)	0.0 - 7.0	7	7	Discharge from industrial chemical factories	No
Chlorine (ppm)	0.0 - 0.70 0.06: highest running annual average	4	No MCLG	Water additive used to control microbes	No
Unregulated Substances (MCL has not been established)					
Sodium (ppm)	13 - 110	No MCL	No MCLG	Erosion of natural deposits, road salting	Unregulated contaminants have no established MCL
MTBE (ppb)	0.0 - 2.0	No MCL	No MCLG	Gasoline additive	
Chloroform (ppb)	0.0 - 7.0	No MCL	No MCLG	Formed when natural organic material present in the water reacts with chlorine added as a disinfectant	
Iron (ppm)	0.2 - 0.9	No MCL	No MCLG	Erosion of natural deposits	
Bromodichloromethane (ppb)	0.0 - 2.0	No MCL	No MCLG	Formed when natural organic material present in the water reacts with chlorine added as a disinfectant	
Lead and Copper (30 sites sampled in September, 2004)					
Substance (units)	90th percentile	# sites above Action Level	Action Level	Typical Source	Exceeds AL?
Lead (ppb)	7.0	0	15	Corrosion of household plumbing systems; Erosion of natural deposits	No
Copper (ppm)	0.55	0	1.3	Erosion of natural deposits; Leaching; Corrosion of household plumbing systems; from wood preservatives	No

TERMS AND ABBREVIATIONS

MCLG: Maximum Contaminant Level Goal: The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

MCL: Maximum Contaminant Level: The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

AL: Action Level: The concentration of a contaminant, which if exceeded, triggers treatment or other requirements which a water system must follow.

pCi/L: picoCuries per liter

ppm: part per million by volume

ppb: part per billion by volume

90th Percentile: The concentration of a substance that falls at the top ninety percent of all values for that substance.

Discussion of Data Table Detections

SODIUM: Although sodium does not have a Maximum Contaminant Level, the Commonwealth of Massachusetts does have a guideline of 20 parts per million (ppm) for sensitive individuals, such as those on very salt-restricted diets. The Acton Water District notifies the Board of Health of all sodium results, and results of the most recent sodium tests are posted at: the Acton Public Health and Nursing Service offices; the Acton Water District Information Center and website; the Acton Public Library; and the Acton Senior Center. We have noticed an increasing level of sodium in a well closest to our main office garage. The increased sodium is most likely due to a soap which had been used to wash district vehicles. We have discontinued all on- site vehicle washing, and follow up tests show decreasing sodium at the problem well. Sodium levels in drinking water vary considerably from well to well and month to month. For the most accurate data on sodium levels at your home, an individual tap sample would be necessary.

SOCS: In 2003 the Acton Water District monitored all wells for all regulated synthetic organic chemicals (SOCs). These SOCs are primarily pesticides and herbicides, and are required to be monitored in all public water supplies at regular intervals. The Acton Water District has received a waiver from frequent monitoring from the Department of Environmental Protection because no SOCs were detected in this or previous cycles of testing,

MTBE: MTBE (methyl tertiary-butyl ether) is commonly used as a fuel additive to increase the octane rating of gasoline. Health effects (based upon animal studies) associated with MTBE include kidney problems and higher tumor incidence. Recent national surveys indicate that MTBE is being found with increasing prevalence in drinking water, most commonly due to leaks in above and below ground petroleum storage tanks and pipelines. The Acton Water District has detected a very low level of MTBE – well below the EPA Guideline – in the water leaving the Assabet treatment facility. Because treatment at this wellfield does not fully remove MTBE, we are planning modifications to the current treatment facility to more effectively remove MTBE.

1,1 DICHLOROETHYLENE: This volatile organic chemical, more commonly known as VDC, has been found throughout the plume of groundwater near the former WR Grace site in South Acton. The Acton Water District monitors both the raw and treated water from all the wells in the area of the plume. All detections of VDC are in raw water only; there was no VDC detected in treated water (the water that enters the distribution system) in 2006.

FLUORIDE: In April of 2006, one of two fluoride samples collected at the Kennedy Wellfield facility contained 5.3 mg/L of fluoride. The other sample was near the target level of 1.0 mg/L. Additional samples taken throughout the distribution system that day were also near the optimal level of 1.0 mg/L. Customers would not have been exposed to an elevated level of fluoride as the Kennedy well was immediately shut down after the sample was collected.

Some people who drink water containing fluoride in excess of the MCL (4 mg/L) over many years could get bone disease, including pain and tenderness of the bones. Fluoride in drinking water at half the MCL or more may cause mottling of children's teeth, usually in children less than nine years old. Mottling, also known as dental fluorosis, may include brown staining or pitting of the teeth, and occurs only in developing teeth before they erupt from the gums.

Because of the MCL violation, the Acton Water District was required to resample for fluoride at the same site the following quarter. Although we did sample for fluoride at several locations the following quarter, we did not resample at the Kennedy Wellfield site, and this constitutes a monitoring violation. Quarterly fluoride monitoring at the Kennedy Wellfield site is now being regularly conducted, with all samples reported well below the maximum contaminant level.

VOLUNTARY MONITORING: In addition to the monitoring required by the Safe Drinking Water Act, the Acton Water District voluntarily conducts dozens of additional tests each year to ensure high quality water. For more information on our voluntary monitoring, please contact us.

VULNERABILITY: Some people may be particularly vulnerable to impurities in drinking water. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Water Drinking Hotline (800-426-4791).

For more information, additional copies, or comments on this report, contact:

Acton Water District
attn: Jane Ceraso
PO Box 953, 693 Massachusetts Avenue
Acton, MA 01720
Phone: 978-263-9107 • Fax: 978-264-0148
E-mail: jceraso@actonh2o.com

New Rates and Billing Cycle

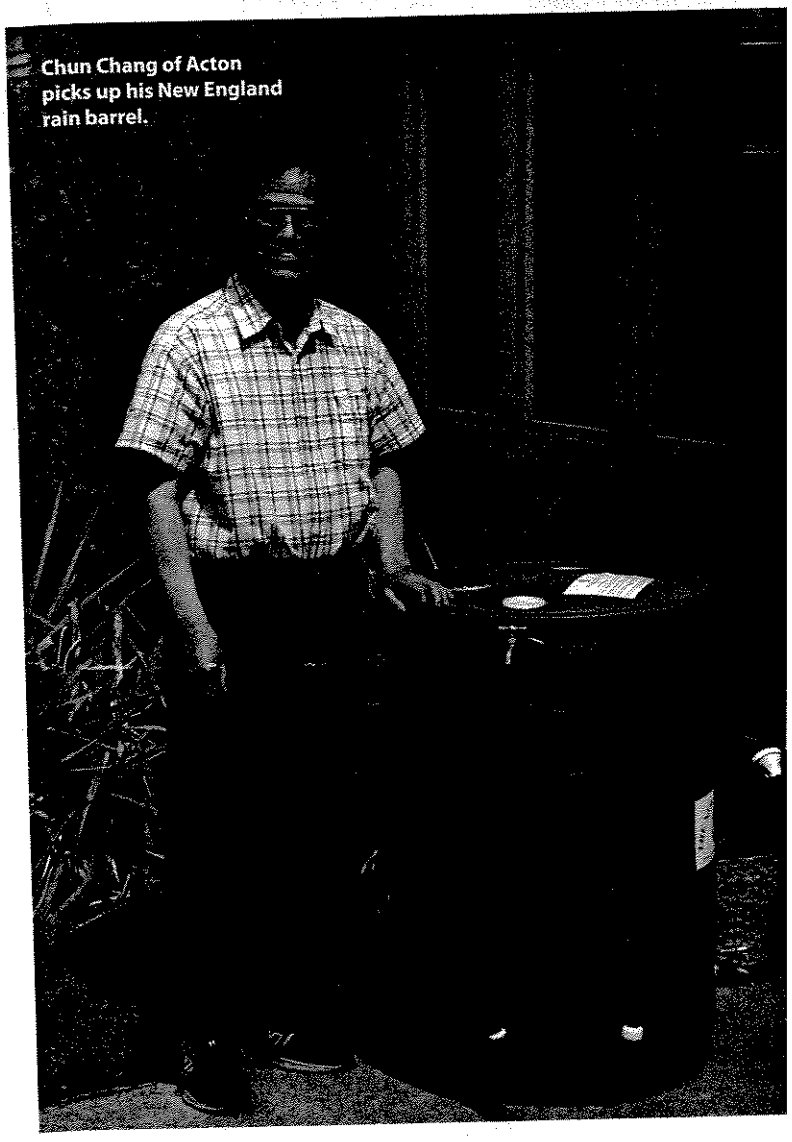
Within the next few weeks, you should be receiving your first quarterly water bill from the Acton Water District. You may recall that in October 2006 the Board of Water Commissioners voted to adopt a new water rate structure and a quarterly billing cycle. These rates and new billing cycle went into effect March of 2007, and will be reflected in your next water bill, which should arrive in early July.

Quarterly billing will allow us to be more proactive in identifying any unusual increases in consumption, many of which can be explained by leaks, particularly in toilets. Anyone who would like to see what their new water bill might look like can go to the "calculate bill" link on our web site *www.actonh2o.com* and use the "calculator" to obtain current billing information for various levels of consumption. Anyone who has any questions regarding these new rates, or the quarterly billing cycles, is encouraged to contact the office at 978-263-9107 between the hours of 7:30 a.m. and 4:00 p.m. Monday through Friday.

Let it Rain!

As drought and the prospect of global warming increasingly call attention to the possibility of future water shortages across the Northeast, more and more people are seeking ways to minimize impact on their water supplies. One simple, inexpensive, and easily implemented part of the solution is the installation of rain barrels to collect roof runoff during rainstorms. Just look outside your window the next time it rains and see all the water that is running down your driveway. Believe it or not, for every inch of rain that falls on a catchment area of 1,000 square feet (a modest roof size) you can collect approximately 600 gallons of rainwater. The Acton Water District encourages you to consider "harvesting" this water by installing a rain barrel, which you can purchase through us at a substantial discount during one of our spring rain barrel events.

On May 8th, 75 rain barrels went home with Acton residents to be employed in the collection and storage of rain runoff for future outdoor water use needs. Many residents participate in the rain barrel program, citing the convenience of having "free" water for outdoors use — even during periods of watering restrictions. The barrels are recycled from previous non-toxic uses, and provided through the New England Rain Barrel Company. Half of the price of the rain barrels is paid by the Acton Water District, so the barrels are a real deal! If you missed picking up a barrel this year, keep your eyes open for future rain barrel events, usually held in early May each year.



Chun Chang of Acton picks up his New England rain barrel.

Acton Water District

Est. 1912

New Homeowners Water Conservation Package Available

Are you new to Acton? Are you confused about Acton's water conservation rules and regulations? We now have new residents packets designed to help you better understand the Acton Water District's water conservation rules, regulations and programs. These packets are also full of helpful tips for conserving water. Please stop by the Water District headquarters between 7:30 AM – 4 PM to pick up your informational packet.

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published twice a year
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What is it?

Please email your answers to *webgeek@actonh2o.com*. Winners (and the correct answer) will be posted in the next *Water Words Notice.*

What was it?

What was it? *No one* correctly identified the mystery photo in the last *Water Words Notice*—obviously a tough one! The photo was of a cross-section of a groundwater model, showing the different layers of sands and gravels that can serve as underground "reservoirs" that hold water. This particular groundwater model is used by the Acton Water District to demonstrate how aquifers function, how groundwater interacts with surface water, and how groundwater can become polluted. This past fall alone, the model traveled to each of Acton's elementary schools, helping demonstrate the importance of groundwater to over 500 students.